



Agriculture and the Emissions Trading Scheme (ETS):

How do we enable farmers to respond?

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Agricultural & Horticultural Science Inc. Forum

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Introduction

- The question I have been asked to respond to today is: “How do you see the responsibility of your office in regard to protecting the New Zealand environment in the context of having agriculture enter the ETS?”
- It’s a rather curious question. The responsibilities of my office in respect of the environment are set out in the Environment Act 1986 and I can choose to contribute, intervene or keep my silence as I see fit. There is nothing special about agriculture entering the ETS that would cause me to examine my mandate. Just about anything that impinges on natural resource use qualifies.
- It’s also a question that seems to assume that agriculture will enter the ETS. That’s perhaps understandable given that the Government has asked the Interim Climate Change Committee how it should enter the scheme. This replaces the discussion over preceding years about whether agriculture should be ‘in or out’ of the emissions trading scheme.
- Neither question is particularly useful. There is no single way of dealing with agricultural emissions. There are many different approaches that could be taken, and bringing agricultural emissions into the ETS is just one option. The question should be about how best we can mitigate agricultural emissions.
- There is no easy blueprint to follow for reducing them. No single policy will be sufficient. New Zealand must chart a path forward that makes sense of our national circumstances and international commitments, and that is grounded firmly in science.
- For that reason I am working on an in-depth investigation into the treatment of biological sources and sinks across New Zealand’s landscapes, as part of New Zealand’s climate policy. As part of that enquiry I will seek to highlight key issues to consider as an approach is developed.
- It is clear that any debate around alternatives should command a solid scientific basis, and explore the potential consequences of different approaches for a wide range of environmental outcomes and our landscapes. I’m not in a position to share many conclusions at this stage. But I would like to say a few words about methane, emissions pricing and forest sinks.

Methane

- To help clarify the science around methane, two weeks ago I released a short piece of work titled "A note on New Zealand's methane emissions from livestock"¹.
- The note accompanied the release of some modelling work I commissioned from Dr Andy Reisinger, examining the warming impacts of New Zealand's livestock methane. I commissioned that modelling as part of the investigation currently underway.
- I released that modelling work early because of conversations currently underway about the form New Zealand's climate target should take, particularly how methane should be treated as part of that target.
- Dr Reisinger's modelling showed that holding New Zealand's emissions of livestock methane steady at current levels would not be enough to avoid additional warming from this source.
- This is due in part to the inertia in the climate system, and partly because methane emissions disrupt the global carbon cycle, causing more CO₂ to enter the atmosphere.
- The modelling also showed that *if* the goal were no additional contribution to warming above the current level – and the "if" here is important – then New Zealand's methane emissions from livestock would need to be reduced by 10-22 per cent below 2016 levels by 2050, followed by continued reductions after 2050.
- A few points are worth mentioning about these ranges. First, if other countries take strong climate action to meet Paris Agreement goals, New Zealand's emissions of livestock methane would need to be reduced by about 22 per cent by 2050 to avoid additional warming.
- Counter-intuitive though it may be, if other countries only take some action but not enough to achieve well below 2°C, then New Zealand emissions from methane would need to be reduced by only 10 per cent. That's because the potency of our emissions depends on total atmospheric concentrations of the entire cocktail of greenhouse gases.
- Given that the Zero Carbon Bill is intended to be aligned with the Paris Agreement, an assumption that other countries will act to achieve its goals seems appropriate.
- Another point worth noting is that many people misinterpreted the impact of the reductions required. Dr Reisinger's modelling, which was not economically optimised, showed that the emission trajectories required to meet the 'no additional warming' objective were not linear – deep initial reductions in livestock methane would be needed.
- Yet many people interpreted the 10-22 per cent requirement as being achievable through straight line, incremental annual improvements in emissions intensity. To meet a 'no additional warming' objective, however, larger reductions would be needed by 2050 if the deep initial reductions shown in the modelling were not achieved. As I remarked, this may or may not be realistic.
- To my mind the key thing is not to be too hung up on the exact number in 2050. Rather, our efforts should simply focus on working together to start reducing our methane emissions. I am hopeful that my report will be able to shed similar light on nitrous oxide.

1. Parliamentary Commissioner for the Environment, 2018. *A note on New Zealand's methane emissions from livestock*. Parliamentary Commissioner for the Environment: Wellington.

Emissions pricing

- Let me now turn to emissions pricing and the consequences of relying on an 'all gases, all sectors' emissions trading scheme together with heavy reliance on forest sinks to offset our gross emissions.
- New Zealand's preferred policy approach has always centred around putting a price on emissions, so as to reduce emissions at least cost. But it has never been fully implemented.
- The ETS has been in place 10 years, but is only now phasing out 'transitional measures'. These measures are part of the reason we have not yet seen an emissions price capable of changing behaviours and investment patterns.
- If fully implemented in its purest form, an 'all gases, all sectors' ETS is built around the concept of complete fungibility between gases. But we know that methane and nitrous oxide are quite different from carbon dioxide in terms of their lifetimes, potencies and broader impacts on the environment.
- The Productivity Commission recommends that carbon dioxide and nitrous oxide as long-lived gases should be placed into the ETS, and their combined emissions reduced to net zero by 2050.
- On the other hand, they recommend methane should be treated differently because it is a short-lived gas, and called for a different policy approach. I found their policy suggestion of a methane quota scheme particularly interesting.
- However, I remain uncertain about this split for a two baskets approach. In an address to the RMLA two years ago, I noted that simply because nitrous oxide is a long-lived gas it does not necessarily mean it should be placed into the ETS.
- In that speech I suggested that a two baskets approach might be better split where one basket is based on agricultural emissions and the other on fossil emissions.
- One critical determinant of *if* and *how* we construct a two basket approach is the way we address forestry.

Forestry

- In New Zealand, a pricing signal from the ETS coupled with unlimited access to forestry credits is expected to result in a huge increase in afforestation between now and 2050.
- Recent modelling indicates that up to an additional 2.8 million hectares in forests will be needed to reach net zero emissions by 2050. To achieve this, a planting rate similar to the highest ever recorded in New Zealand would likely need to be sustained for decades.
- But this heavy reliance on forestry comes with genuine risks. First, there is a limited amount of land available that is suitable and economically viable for conversion to forest. At some point, carbon sequestration through afforestation will reach a limit as the most economically viable areas are used up.
- Second, the permanence of forest sinks cannot be guaranteed, especially given that climate change is expected to exacerbate the risk of damage from fire, diseases and storms. If we are going to start relying heavily on carbon sequestration in standing stocks of forest, we had better take care to ensure that our risks are appropriately matched.

- Finally, relying heavily on forestry could further delay action to reduce *gross* emissions. For many years forestry has been viewed as a 'bridge' option to buy us more time. But it is a bridge we haven't managed to build, let alone use. Each tonne of carbon dioxide offset through forestry is a tonne not reduced at source. If gross emissions remain high in the near to medium term, it could make it even more difficult and costly to achieve deep reductions in gross emissions in the longer-term.
- I believe trading forest sinks against fossil emissions may send the wrong signal in a world that needs to significantly reduce its reliance on fossil fuels. Perhaps there should be limits on the extent to which forests should be tradeable with fossil fuel emissions. Why should the transport decisions made in Auckland strongly influence the land-use and landscapes in Otago?
- We need to consider the consequences of large-scale afforestation on our landscapes. I have no doubt that converting land to forestry can provide significant co-benefits if the right tree species are planted in the right places, such as water quality and erosion control. But it will not be without consequences for our landscapes and communities.
- For this reason, I suggest we need to consider other environmental objectives in the mix when developing climate policy. This means we need to think very carefully about the interactions between climate policies and policies in other domains. I hope to be able to offer some thoughts on this in my report which now looks as though it will be available early in the new year.

Conclusion

- So to conclude, New Zealand's emissions profile reflects the way we have managed our land over the last 170 odd years.
- Challenging as it is, climate change is not a problem that can or should be viewed in isolation from other environmental issues.
- Do we want a least-cost approach to reaching our climate goals to determine what our landscapes look like? Or are there other considerations we should have in mind when developing an approach to reducing emissions? And how do we manage the risks associated with sources and sinks that have very different time horizons?
- I hope to shed further light on these questions. But I won't be offering specific policy recommendations. Rather, the intention of the report is to highlight key issues to consider in developing approaches to mitigating agricultural emissions.
- The nature of the challenge means that our policy makers will have to make compromises and we need to help them to do so because long term challenges require steady, long-term responses. There is no simple, textbook way forward.
- Before we embark on the next significant change to our land-use, we need to think carefully about the environmental consequences of our proposed climate policies and the interactions of these policies with other domains. Our New Zealand landscape depends on this.